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AUTHOR	Manzo, A. V.
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ABSTRACT

A schema for making possible a more systematic means of processing (reading and interpreting) the literature on reading comprehension is discussed. The system is based on classification of the literature into broad categories according to the aspects of reading comprehension which permit intelligent comparisons, contrasts, and insights. It is divided into the following seven categories: (1) pedagogy, (2) reading materials, (3) correlates of reading comprehension, (4) process analysis, (5) speculations; synthetical and divergent statements, (6) evaluation and diagnosis, and (7) reactions. An activity sheet, an overview of the taxonomy, a bibliography, and several examples of studies found in each category are included. Use of the included exercise is recommended for inservice workshops and graduate reading education courses. (CL)

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A. V. Manzo
School of Education
University of Missouri-
Kansas City

A TAXONOMY FOR PROCESSING THE LITERATURE ON READING COMPREHENSION

Recent developments in library science and in ERIC document centers have made possible the intelligent storage and rapid retrieval of a wide range of information. Retrieving information from a larger corpus, however, is an engineering advance. The individual who feels the need to process any of the stored information is still primarily faced with a problem of reading and synthesizing each piece of literature in a more or less random way. The ERIC system does offer some guidance in this regard by offering the reader groups of studies categorized by certain"call" words taken from the title of the article.

This paper offers a system, a rationale for that system, and an exercise for making possible a more systematic means of processing -- reading and interpreting -- the literature on reading comprehension. The system is based on categorizing the literature according to the aspect of reading comprehension which it purports to elucidate.

The exercise recommended at the conclusion of this paper is particularly suitable for in-service workshops and graduate classes in reading-education.

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Rationale

Hoping to understand his environment man has constantly attempted to order things: group them, compare them, contrast them. By so doing, we have been able to exert increasing "control" over the environment; i.e., manipulating those factors which were found to be most vulnerable, or malleable. In general, things which are ordered are predictable and tend to be controllable. Things which are not ordered tend to be ill-defined, unpredictable and given to superstitions.

Plant life, once accepted as a fortuitous condition, was later learned to be related to certain "regularly" variable conditions: earth, water, seasons, vegetation variety. Today all of these can be synthesized to reduce the vagaries of nature and to, in effect, permit the control of most vegetation. Control has in turn permitted the development of plant life which is far superior to anything possible in the "natural" environment.

The goal of this paper is analogous to the advances made possible in controlling plant life. It is to weed, prune and multiply our understandings from the literature on reading comprehension so that we may (1) know better what it is we know, (2) conceptualize better what it is we do not know, and (3) delineate better those understandings which will allow us to simulate the life support conditions conducive to the growth of comprehension skills.

The belief is that the understandings necessary to achieve the above can be developed by manipulating the literature into broad categories, not necessarily mutually exclusive, which permit intelligence comparisons, constrasts and, hopefully, insights to occur.

Seven all-inclusive categories are recommended for initial processing. They would be equivalent to subtopic headings in a Harvard outlining system. Clearly, further refinement is both possible and necessary. A description of each category with articles and/or materials appropriate to each follow.

Category I: Pedagogy

Category I includes all literature dealing specifically with instructional strategies and techniques directed toward improving reading comprehension: e.g.,

(a) all pronouncements on how to teach, or manipulate variables, to improve reading comprehension,

(b) all studies testing the efficacy of specific teaching procedures, and

(c) all materials (books, kits, programmed devices) and analyses of materials designed to improve reading comprehension. An example of each may be helpful.

A. Pronouncements on how.... Herber (1970) has suggested that reading comprehension in "content" class materials proceeds

best when presented via a structured overview which he calls an "Instructional Framework." The Instructional Framework has seven parts: Motivation, Background and Information Review, Vocabulary, Direction, Anticipation, Guided Reading, Guided Reaction. Evaluation of this thesis and variations on it are presently underway. (See Herber & Sanders, 1970.)

B. Studies testing the efficacy of.... The writer recently conducted a study of this type to evaluate his own creation, the ReQuest Procedure (Manzo, 1969 a). ReQuest is a one-to-one teaching technique based on reciprocal questioning between teacher and student over textual material. The ReQuest procedure was compared with the Directed Reading Activity (DRA) in a clinical setting. The students in the ReQuest treatment were found to have made significantly (.05) greater gains on two measures of reading comprehension over the six-week instructional period than those in the DRA (Manzo, 1969b).

C. Materials and analyses of materials..... Certain materials by virtue of their design make a statement about how instruction might best proceed. Don Parker's Reading for Understanding kit (SRA)*, for example, says that comprehension

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*A conference participant informs me that this kit was first designed by the daughter of L. L. Thurstone. I have been unable to verify or refute this.

improvement is a product of careful analysis of each word in each sentence. He has the students relating the words into larger units of understanding by requiring them to select a word or phrase which intelligently completes the statement. Even in his choice of foils, Parker's program says something about instruction. Sometimes the foils will be of the correct syntax but will not be sensible otherwise. Other times they will be lexically, i.e., meaning-wise, correct, but incongruent in terms of syntax. In this way students develop an awareness of syntactics and of content.

Category II: The Reading Materials

This category would include all studies and literature dealing with the influence of the reading material; i.e.,

(a) the content (substance) of such material,

(b) its level of difficulty,

(c) its style and its format (the size and type of print, accompanying imbedded aids, quality of pictures, etc.).

A. The content..... There has been relatively little research on the influence of content on reading comprehension. Both the recognition of the influence and the shallowness of the understanding of the relationship is evident in this representative statement, "Reading comprehension.... requires a different pattern of arrangement of closely related factors or skills in each of the content fields." (Sheldon, 1964)

The writer also believes that the content, or substantive, is intimately related to comprehension both of the moment and on the long term. However, the model which he has proposed of reading comprehension training still could do no better than to simply say that it is a crucial second level factor (Manzo, 1970).

B. Level of difficulty..... It is extremely difficult to separate studies dealing with difficulty from those dealing with style and format. The latter two sub-classifications could be viewed as subsets of the set "Level of difficulty...". For the sake of this taxonomy this set is considered exclusive of the other two for the sake of convenience. The convenience being the separation of studies dealing with readability formulae from all other studies dealing with other factors related to readability levels, but not necessarily to readability formulae.

The studies of Bormuth (1966), Klare (1963) and Coleman (1966) are good examples of studies which were dedicated to developing better readability formulae. Their modus operandi was to identify many language variables which have been found to be predictively related to readability. Several of the most highly predictive of these variables were then combined in readability formulae.

Presumable with such formulae it should be possible to select materials appropriate to the independent and instructional level of students and thereby facilitating reading comprehension and the growth of reading comprehension skills.

C. Style..... Regarding the influence of style on readability--- and therefore on reading comprehension---- Coleman (1962) found that technical passages divided into short sentences were significantly more comprehensible than their long sentence counterparts. Coleman adds, however, that the magnitude of improvement, while statistically significant, was small -- about 6%. Schiffman (1966) has reviewed many of the factors related to style and readability and has developed a list of recommended means by which to write very easy materials.

D. Format..... Relatively few studies have been done to determine the extent to which format (size of type, mode of presentation, etc.) effect comprehension. The most notable, of course, are the studies of Dr. Tinker (1934, 1936, 1946). At a recent conference (National Reading Conference, Los Angeles, December, 1969) Tinker dismissed much of this work as being irrelevant to instruction and learning. More recently, however, Reichard & Reed (1970) have analyzed relationship between variable

spacing and marginal verification (adjustment of type so that the right hand margin is even) on the reading rate and comprehension of retardates. They found that children reading double spaced materials with unverified right margins had the higher mean comprehension scores than those reading double-spaced material with verified right margins.

Category III: Correlates of Reading Comprehension

This category probably includes the largest bulk of comprehension studies. These studies are primarily explorations attempting to show relationships between reading comprehension and various

(a) affective and

(b) cognitive correlaries.

A third subcategory might be developed dealing with the relationship of reading comprehension to other related skills--e.g., rate, vocabulary, writing skills, etc. Only the affective and cognitive are considered here.

Because correlational studies are primarily exploratory in nature they might best be thought of as the intermediate step between some vague belief that two items are related and the development of a testable hypothesis stating what is believed to be the nature of that relationship. In educational research the hypothesis ultimately developed and tested will usually be designed to determine whether factor X (in this case, reading comprehension) can be "significantly" improved by manipulating factory Y (e.g., self-concept,

problem-solving ability, etc.)

A. Affective Correlary..... One of the more notable studies exploring the relationship of an affective correlary was able to show a high correlation between reading comprehension and curiosity (Maw & Maw, 1962). This finding led the researchers to conclude that the average classroom teacher should be concerned about the development of curiosity as fundamental to comprehension. This is clearly a rather hasty conclusion. Improving curiosity--if that were possible--may have little to do with improving comprehension. However, both reading comprehension and curiosity may grow simultaneously when several other viable factors are manipulated.

B. A Cognitive Correlary: An investigation of a cognitive factor found a high negative correlation between reading comprehension and concrete thinking (Jan-Tausch, 1962). One should presumable conclude from this that students should be trained to think more abstractly prior to being given instruction in reading comprehension per se. Intuitively, this sounds like a more reasonable conclusion than the one above, but again, it is yet to be proven.

Correlation studies seem to have fallen into relative disrepute in recent years. There are, at least to this writer's eye, considerably fewer being reported than five or ten years ago.

Category IV: Process Analysis

Process analysis is perhaps the most nebulous category. It includes factor analytic and process description studies. It is difficult to separate these into subtopical categories. Studies of this type are usually quite complex and have become increasingly esoteric. The first study of this type is traditionally believed to be a study carried out by E. L. Thorndike in 1917. This study sought to simply demonstrate that reading comprehension is an extremely complex process. The basic thesis of the study was that "answering simple questions about a simple paragraph...includes all the features characteristic of typical reasoning" (p. 323). (It should be noted that this conclusion was arrived at in a different way from the correlation studies noted above.) Beyond this simple assertion, Thorndike also laid the foundation for many current practices, including the currently popular notion of "Uninterrupted, Silent, Sustained Reading" (USSR). The most notable contemporary studies based on this same quest are the Holmes and Singer studies (1958). These studies, while considerably more sophisticated in design and execution, essentially tell the same tale; vis-a-vis, comprehending is a complex task requiring the proper synchromatic functioning of physical, psychological and intellectual operations. The basic difference between these studies is that Holmes and Singer attempted to specify, by use of a factor analytic method, just what these factors might be. Their studies led them to believe that they had properly identified the majority (71%) of the factors comprising "power of reading."

Plessas (1965) has argued against this conclusion (see category VII below).

Category V: Speculations

If Category IV is nebulous, Category V, in spite of its all inclusiveness, is much less so. Category V includes all articles, models, definitions and synthetical statements which tend to be so divergent as to not fit into existing structures. Two examples should suffice. The author presented a theoretical model at the National Reading Conference (Dec., 1969) which attempted to describe the interaction between many factors believed (at least he believed) to be involved in the development of reading comprehension. The purpose of the model was to offer a means for analyzing a teaching-learning situation for the purpose of offering clues for intervention. The model was, in a word, offered as a means for observing instructional and learning behavior. The model attempted to take into consideration such factors as the intellectual and critical thinking ability of the teacher (Tc), and the power of the teacher to model or to conjure for students models of the desired comprehension behaviors (Ms). It also included such factors as predispose a student's learning ($Pi_{i...x}$): intelligence, cognitive style, risk-taking behavior, impulsivity, etc.

In a somewhat different vein, Rystrom, in a two part article (1970a, 1970b), has recently attempted to move toward a definition of reading comprehension. Part I seems to be saying that there

are special relationships between language, experience and the reading act, all of which need to be taken into account in any definition of reading comprehension. Part II examines this thesis relative to six different factors: vocabulary, syntax, item recall, item sequence, interpretation, and evaluation. Rystrom found that ability to recall specific factual information accounts for nearly 33% of the total variance in his tests of reading comprehension. Presumably, this suggests that teachers should concentrate on developing immediate recall before attempting to develop higher order skills.

Category VI: Evaluating and Diagnosing:

This category was designed to include those publications dealing with

(a) the static evaluation of group comprehension - as with standardized tests;

(b) the dynamic evaluation of individual comprehension - as with informal measures and diagnostic teaching procedures; and

(c) with issues and rationales related to evaluation.

A. Static Evaluation.... It should be noted that the term "static," as used here, should not be construed as to connote something derrogatory. It simply says that the primary purpose of this type of evaluation (usually of groups) is almost exclusively to determine what has been learned relative to established norms rather than to direct what should be learned. Consider the "Cooperative Reading Comprehension Tests" (New York Test

Service, 1940). Davis (1944) explains that he designed this test to measure each one of nine basic skills; thereby providing information of potentially great diagnostic, and consequently instructional, value. In fact, this test, like most standardized comprehension tests, cannot measure distinct factors and is therefore best used for static evaluation.

(See Thurstone's discussion of the Davis tests below in the "Reaction" category).

B. Dynamic Evaluation... The terms "Dynamic Evaluation" in this context refer to on-going, informal (that is non-standardized, in the normative sense) evaluation. Dynamic evaluations are almost always made to determine instructional needs. They are more spontaneous, and they frequently involve interpretations based on the subjective observations of the examiner. An excellent example of this type of evaluation is the Informal Reading Inventory for Adults developed by Leibert (1969). The Leibert Inventory consists of a graded word list, a readiness or warm-up oral reading passage and two equivalent sets of graded passages for oral reading. The passages, of approximately 100 words each, were collected from a variety of Adult Basic Education materials representing 9 levels of difficulty from first to 10 level difficulty.

C. Related issues and rationales..... There are obviously many issues related to testing and evaluation. There is the issue of criteria, statistical systems for analyzing tests, length of tests, types of questions, purpose for evaluation, etc. There is also the possibility of articles and studies dedicated to developing the rationales for certain teaching-testing procedures.

Often many of these factors appear in one study or article. Such is the case with a study by Guszak (1967) in which he developed a "Reading Comprehension Inventory." In this study Guszak identified 6 classes of questions -- recognition, recall, translation, conjecture, explanation, evaluation. He also made some interesting observations concerning the range of questions teachers typically ask and those he believes they should ask. He says of the questioning behavior of elementary school teacher: "Not only did teachers relegate higher reading-teaching skills to a minor role, but they also tended to work at the lowest level of literal comprehension by asking many recall questions about minute facts.... The root of the problem seemed to be the teacher's lack of understanding of a basic structure of reading teaching skills." (p. 107)

Category VII; Reactions

In any area of investigation in which there are speculations and research, there are necessarily criticisms and wherever there are criticisms, rebuttals are a logical necessity. Consider these examples.

A. Criticisms..... Perhaps one of the most poignant criticism in recent years was that of Plessas (1965) of the "Substrata Factor" theory developed by Holmes and Singer. Plessas systematically raised questions which hit at the heart of the basic mathematical system used to develop the theory, the criterion measures used to develop basic data and the methods used to interpret findings. Assuredly, Singer (the surviving member of this research team) can answer, or at least explain-away, some of these criticisms. But, to the best of my knowledge, he has not yet done so in print.

An even more scathing criticism was delivered a generation ago by L. L. Thurstone (1946) of Davis' reading tests. Thurstone reanalyzed Davis' data and concluded that there is a single factor common to all nine of Davis' subtests and that this factor accounts in larger measure for the high correlations between all other factors. Thurstone says further that if the data were his, his major conclusion would be that the 9 subtests are shown to be measures of the same function, and that there is no evidence about the components of the complex that we call reading ability (p. 188).

B. Rebuttal.... The number of rebuttals to criticisms have not been equal to the number of criticisms. An admittedly cursory investigation has disclosed only a single rebuttal. It is Davis' rebuttal to Thurstone. Davis' (1946) rebuttal says, in

effect, that

(1) Thurstone analyzed Davis' data in a different, and not altogether appropriate way, and

(2) that Davis' original conclusions had greater "social utility" (that is teachers could use it) than did Thurstone's conclusions, which were "neither informative nor helpful." (p. 255). Davis did, however, in this 1946 rebuttal, reduce from 9 to 5 (if you'll forgive the pun) the number of independent mental abilities involved in reading comprehension.

Activity: Below are several comprehension studies which fit into one or the other of the above listed categories. Read and discuss them with friends to see which categories you would place them in. Some will verify findings mentioned above, others should raise new doubts.

(A) Davis, Frederick B. "The Assessment of Change," in Bliesmer, E. and Kingston, A. J., Editors, Phases of College and Other Adult Reading Programs, 10th Yearbook, National Reading Conference, 1961.

(B) Ruddell, Robert. The Effect of Oral and Written Patterns of Language Structure on Reading Comprehension, Reading Teacher, January, 1965.

(C) Schneyer, J. W. "Use of the Cloze Procedure for Improving Reading Comprehension, Reading Teacher, Dec., 1965.

(D) Piekarz, Josephine A. "Getting Meaning from Reading," Elementary School Journal, 1955.

(E) McCullough, Constance. Responses of Elementary School Children to Common Types of Reading Comprehension Questions, Journal of Education Research, Sept. 1957, 51: 65-70.

(F) Christense, C. M. & Stordahl, K. E. The effect of organizational aides on comprehension and retention, Journal of Educational Psychology, 46, 2:65-74.

(G) Kingston, A. J. "A Conceptual Model of Reading Comprehension," in Bliesmer E. and Kingston, A. J., Editors. Phases of College and Other Adult Reading Programs, 10th Yearbook of the National Reading Conference, Milwaukee, 1961.

OVERVIEW OF TAXONOMY FOR PROCESSING LITERATURE IN READING COMPREHENSION

A. V. Manzo

Category	Examples	
I. Pedagogy:		
(A) Pronouncements	Herber	(1970)
(B) Test of Efficacy	Manzo	(1969)
(C) Materials & Analyses	Parker	(SRA)
II. Reading Materials:		
(A) The Content	Sheldon	(1964)
(B) Level of Difficulty	Bormuth	(1966)
	Klare	(1963)
	Coleman	(1966)
(C) Style	Coleman	(1962)
(D) Format	Tinker	(1934, '36, '46)
	Reichard & Reed	(1970)
III. Correlates of Reading Comprehension:		
(A) Affective Correlaries	Maw & Maw	(1962)
(B) Cognitive Correlaries	Jan-Tausch	(1962)
(C) Skill Correlaries	Davis	(1944)
IV Process Analysis:		
(A) Exploratory, factor analytical and process description	Thorndike	(1917)
	Holmes & Singer	(1958)
	Holmes	(1948)

Category	Examples	
V. Speculations; Synthetical & Divergent Statements:		
(A) Models	Manzo	(1969)
(B) Definitions	Rystrom	(1970a)
		(1970b)
VI. Evaluating & Diagnosing:		
(A) Static Evaluation	Davis	(1944)
(B) Dynamic Evaluation	Leibert	(1969)
(C) Related issues & Rationales	Guszak	(1967)
VII. Reactions:		
(A) Criticisms	Thurstone	(1946)
	Plessas	(1965)
(B) Rebuttals	Davis	(1946)

BIBLIOGRAPHY

Bormuth, J. R. Readability: A New Approach, Reading Research Quarterly, 1 (1966), 79-132.

Christensen, C. M. & Stordahl, K. L. The Effect of Organizational Aides on Comprehension and Retention, Journal of Educational Psychology, 1955, 46, 2:65-74.

Coleman, E. B. Experimental Studies of Readability (Part I) Elementary English, 25, 2, 1968, p. 166-178.

Coleman, E. B. Improving Comprehensibility by Shortening Sentences, Journal of Applied Psychology, 46, 2, 1962, 131-134.

Davis, F. B. Fundamental Factors of Comprehension in Reading, Psychometrika, Sept., 1944, pp. 185-192.

Davis, F. B. A Brief comment on Thurstone's Notion A Reanalysis of Davis' Reading tests, Psychometrika, 11:2, 1946, pp. 249-255.

Guszak, F. J. Teacher's Questions and Levels of Reading Comprehension. In T. C. Barrett (ed.), The Evaluation of Children's Reading Achievement. Newark, Delaware: International Reading Association, 1967.

Herber, H. L. Teaching Reading in Content Areas (New Jersey: Prentice-Hall, 1970).

Herber, H. L. and P. L. Sanders. Research in Reading in the Content Areas - First Year Report. Editors, Reading and Language Arts Centers, Syracuse University (Syracuse, N. Y., 1969)

Holmes, J. A. and H. Singer. Basic Assumptions Underlying the Substrate Factor Theory. Reading Research Quarterly, 1965, I:1, 5-28.

Holmes, J. A. Factors Underlying Major Reading Disabilities at the College Level. Doctoral dissertation, University of California, Berkeley, 1948.

Jan-Tuasch, James, Concrete Thinking as a Factor in Reading Comprehension, Challenge and Experience in Reading, IRA Conference Proceedings, Vol. 7, 1962, pp. 161-164.

Klare, George R. The Measurement of Readability. (Ames, Iowa: The Iowa State University Press, 1963).

Leibert, R. E. The Development of Informal Tests of Reading Performance of Adults Attending Basic Education Classes, Office of Education funded research. Sept., 1969; in mimeo University of Missouri-Kansas City.

Manzo, A. V. ReQuest Procedure, Journal of Reading, Nov., 1969a, pp. 123-126.

Manzo, A. V. Improving Reading Comprehension Through Reciprocal Questioning, unpublished dissertation, Syracuse U., Feb., 1969b.

Manzo, A. V. A Theoretical Model of the Teaching-Learning Factors Believed to be Interacting in the Development of Reading Comprehension, National Reading Conference Yearbook, 1969. (In press)

Maw, W. and Maw E., Children's Curiosity as an Aspect of Reading Comprehension, Reading Teacher, 15:236-240.

Parker, Don, Reading for Understanding, (Kit) Science Research Laboratories

Plessas, Gus P. Substrata-Factor Theory of Reading: Some Questions in J. Allen Figurel. Editor, Reading and Inquiry, IRA, Newark, Delaware, Vol. 10, 1965.

Reichard, C. L. and Reid, W. R., An Investigation of Format for Reading Material for the Educable Mentally Retarded. Journal of Reading, 1970, 13, 5:363-367.

Rystrom, R. Toward Defining Comprehension, Journal of Reading Behavior, 2:1, 1970, 56-74.

Rystrom, R. Toward Defining Comprehension: Second Report, Journal of Reading Behavior, 2:2, 1970, 144-157.

Sheldon, Wm. D., What is Reading Comprehension? - a research view in Mazurkiewiz, A. J., New Perspectives in Reading Instruction. (New York: Pitman Publishing Co., 1964) 224-228.

Schiffman, G. Mature content for immature skills, The Disabled Reader, Editor, John Money, John Hopkins Press, Baltimore, Md., 1966.

Tinker, M. A. The Role of Eye Movements in Diagnostic and Remedial Reading, School and Society, 1934, 39: 147-148.

Tinker, M. A. Eye movements in reading. Journal of Ed. Research, 1936, 30: 241-277.

Tinker, M. A. The Study of Eye Movements in Reading. Psychol. Bulletin, 1946, 43: 93-120.

Thorndike, E. L. Reading as Reasoning. A Study of Mistakes in Paragraph Reading. Journal of Ed. Psychol., 1917, 8: 323-332.

Thurstone, L. L. Note on a Reanalysis of Davis' Reading Tests, Psychometrika, 11:3, 1946, 185-188.